State of Nevada – Department Of Personnel

CLASS SPECIFICATION

TITLE	GRADE	EEO-4	CODE
HIGHWAY EQUIPMENT MECHANIC III	**33**	**G**	**9.317**
HIGHWAY EQUIPMENT MECHANIC II	**32**	**G**	**9.318**
HIGHWAY EQUIPMENT MECHANIC I	**31**	**G**	**9.321**

SERIES CONCEPT

Highway Equipment Mechanics are principally involved in the maintenance, repair, and modification of medium (GVWR 10,500-26,000 lbs.) and heavy (GVWR greater than 26,000 lbs.) highway maintenance and construction equipment including single axle dump trucks, tandem axle dump trucks, motor graders, chip spreaders, truck mounted backhoes, twin diesel powered rotary snow blowers, ten wheel water trucks, front end loaders, tractor/trailer combinations and pavement grinding machines. Though the majority of duties involve medium and heavy equipment, Highway Equipment Mechanics may also maintain, repair, and modify light equipment. Positions in this class characteristically work on a large variety of complex heavy equipment from many different manufacturers. Repairs and service may be done in an equipment shop or in the field.

Determine the cause and extent of component or system failure through test drives, pressure and temperature checks, disassembly, inspection, use of diagnostic equipment, and reference to technical manuals, service information bulletins, blueprints and schematic manuals; plan course of action and order the parts required for repairs by researching a parts manual to locate the proper part, contacting vendors if necessary, and completing purchase requisitions.

Repair and/or rebuild brake systems, steering components and suspensions. Brake service and repair includes: replacing brake shoes and pads, turning drums and rotors on a brake lathe; rebuilding master cylinders and wheel cylinders; repairing brake lines, hoses and power booster; maintaining and overhauling air brake systems to include air compressor, governor, reservoirs, air dryers, control valves, and actuators; updating obsolete systems to meet current legal requirements. Steering component service and repair includes: repacking cylinders or rebuilding power steering pumps; repairing or replacing tie rod ends, drag links, idler arms, ball joints, adjust sleeves, bushings, king pins, and spindles. Suspension service and repair includes: repair or replacement of springs, pins, bushings, axles, spring shackles, mounts and shocks.

Perform hydraulic system service and repair including repairing leaks; replacing or fabricating hoses, fittings, and O-ring seals; rebuilding hydraulic pumps and motors; repairing hydraulic control valves, cylinders and rams; designing equipment to utilize an existing system to perform additional tasks not originally intended for the system such as freeway line stripers and pavement marking machines.

Repair and/or rebuild power distribution systems including making adjustments, replacing gaskets, oil seals, fittings and lines; repairing axles, U-joints, and power take-off units. Perform major repairs by: removing differentials, transfer cases, transmissions and clutches; rebuilding these parts and reassembling with new parts as needed; making correct adjustments; making needed modifications; reinstalling and conducting road tests.

Perform electrical system diagnosis and repairs which includes repairing or replacing electrical components such as batteries, alternators, starters, electronic ignitions, relays, regulators and switches. Design new electrical systems or accessories and modify existing systems for computers or video equipment such as systems used for freeway line stripers and pavement marking machines.

Repair diesel and gasoline powered engines by: performing engine checks, adjustments and calibrations to return the engine to its original performance level; replacing injectors; adjusting valves; inspecting and replacing filters;

SERIES CONCEPT (cont'd)

checking pressures. Perform major engine repairs including: disassembling and cleaning external and internal parts for inspection; grinding valves; repairing cylinders, pistons, crankshafts, camshafts and connecting rods; replacing bearings; machine work; reassembling the engine and/or components; testing the complete engine or components through a road test and/or use of a dynamometer.

Design and fabricate mechanical apparatus such as battery holders, tool boxes, and light mounting brackets by: receiving sketches or requirements; designing, laying out and ordering appropriate materials; welding sections together and mounting the apparatus on the equipment.

May perform modifications to lengthen or shorten truck frames to include: cutting the frame; welding the frame and grinding welds; measuring and moving the rear suspension to correct wheel base; measuring the driveline and lengthening lines and wires to fit the components.

Perform related duties as assigned.

****

CLASS CONCEPTS

Highway Equipment Mechanic III: Under general supervision of a Highway Equipment Mechanic Supervisor, perform the duties described in the class concept for Highway Equipment Mechanic II on a regular basis including performing complex diagnosis, repairs, modifications and specialized design and fabrication work; function as a line supervisor for a group of equipment shop personnel comprised of three or more lower level mechanics and skilled craft workers; and performs related duties as required. Line supervision includes interviewing, providing training, assigning and reviewing work, disciplining, and evaluating performance.

This class is distinguished from Highway Equipment Mechanic II by the responsibility for providing line supervision on a permanent basis to equipment shop personnel and functioning as an assistant to the Supervisor of a major district equipment shop on a regular basis.

Highway Equipment Mechanic II: Under general supervision of a Highway Equipment Mechanic Supervisor or Highway Maintenance Supervisor, assists the supervisor the preponderance of the time on a regular and reoccurring basis by: scheduling equipment for maintenance and repairs; monitoring the progress of work; maintaining records and preparing reports; and 1) functioning as a leadworker to lower level mechanics in a major equipment shop or 2) in a remote satellite shop, independently supervising shop operations which may include line supervision over lower level mechanics (less than three) and garage service staff. Leadworker responsibility includes providing training and technical assistance, work assignment, work review, and input into performance evaluations; or 3) work as a Class II Emission Inspector performing inspections and certifying all emissions related repairs performed by non-certified mechanics including diagnostics and providing technical assistance, maintaining test equipment, and documenting and retaining all records regarding emission certification.

Diagnose and determine the time and cost of repairs; complete repair order forms; assign work to shop staff based on skill, training, and priority of repairs; monitor the progress of work in the shop; provide technical assistance. This duty is performed in the absence of the supervisor or to provide support and assistance to the supervisor.

Compile information, maintain records and complete reports including: usage sheets on all vehicles, reports of equipment awaiting repairs, open work orders, equipment data files, tool and equipment inventory, a listing of hazardous chemicals and a file of material safety data sheets, accident reports and accident investigations. This duty is performed in the absence of the supervisor or to provide support and assistance to the supervisor.

CLASS CONCEPTS (cont'd)

Highway Equipment Mechanic I: Under general supervision, perform the range of duties described in the series concept. Work is assigned through repair orders. Supervisory approval is acquired prior to performing costly repairs and for decisions as to whether to repair or replace major system assemblies.

This is the journey level class in the series.

****

MINIMUM QUALIFICATIONS

SPECIAL NOTES AND REQUIREMENTS FOR ALL POSITIONS IN THIS SERIES:

* Incumbents are required to furnish their own mechanic's tools.

* A valid Class A or B Nevada commercial driver's license is required within six months following the date of appointment. An ASME or AWS welding certification may be required for some positions.

* A Class II Emissions Inspector certification may be required for some positions.

HIGHWAY EQUIPMENT MECHANIC III

EDUCATION AND EXPERIENCE: Three years of journey level experience as a heavy equipment mechanic equivalent to a Highway Equipment Mechanic I in Nevada State service plus 30 semester credits with an emphasis in heavy equipment mechanics; **OR** an equivalent amount of experience and education that provided the applicant with the required entry level knowledge, skills and abilities. One year of journey level experience may be substituted for 30 semester credits with an emphasis in heavy equipment mechanics. *(See Special Notes and Requirements)*

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):
Ability to: design and fabricate specialized highway equipment components and systems; train personnel in new methods and procedures; *and all knowledge, skills and abilities required at the lower levels.*

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):
Working knowledge of: principles and practices of management and supervision. **Ability to**: train, motivate, and supervise staff including assigning and reviewing work, establishing work schedules and priorities, administering discipline and evaluating performance; gather, compile, and analyze data to prepare informational reports regarding equipment shop operations and procedures; write specifications for equipment and parts.

HIGHWAY EQUIPMENT MECHANIC II

EDUCATION AND EXPERIENCE: Two years of journey level experience as a heavy equipment mechanic equivalent to a Highway Equipment Mechanic I in Nevada State service plus 30 semester credits with an emphasis in heavy equipment mechanics; **OR** an equivalent amount of experience and education that provided the applicant with the required entry level knowledge, skills and abilities. One year of journey level experience may be substituted for 30 semester credits with an emphasis in heavy equipment mechanics. *(See Special Notes and Requirements)*

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):
Thorough knowledge of: the equipment systems and operating characteristics of light, medium, heavy, and specialized highway maintenance and construction equipment from a variety of manufacturers; methods,

MINIMUM QUALIFICATIONS (cont'd)

HIGHWAY EQUIPMENT MECHANIC II (cont'd)

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (cont'd)
materials, tools and equipment used in the construction, assembly, overhaul, repair, and adjustment of automotive and highway construction and maintenance equipment. **Working knowledge of:** federal and State rules and regulations governing exhaust emission standards. **Ability to**: diagnose, repair and service devices for the control of exhaust emissions; mediate between contending parties or groups; calculate the time and cost of repairs and prepare repair orders; set priorities which reflect the relative importance of repair orders; and establish and maintain effective working relationships with vendors and other sources of technical information. **Skill in**: performing complex diagnoses, repair, rebuilding, and modifications; *and all knowledge, skills and abilities required at the lower level*.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):
General knowledge of: principles and practices of management and supervision; State administrative regulations, policies and procedures regarding personnel and purchasing. **Ability to**: supervise staff including assigning and reviewing work, and establishing work schedules and priorities; establish and maintain records and files and prepare reports pertaining to shop operations, equipment, materials and supplies.

HIGHWAY EQUIPMENT MECHANIC I

EDUCATION AND EXPERIENCE: Four years of supervised skilled experience in heavy equipment repair (such as an apprenticeship) which included experience in repairing and rebuilding a variety of equipment components including gas and diesel engines, cooling systems, transmissions and converters, drive trains, differentials, brake systems, and steering systems plus 30 semester credits with an emphasis in heavy equipment mechanics; **OR** successful completion of the Equipment Mechanic-In-Training program in Nevada State service; **OR** an equivalent amount of experience and education that provided the applicant with the required entry level knowledge, skills and abilities. One year of journey level experience may be substituted for 30 semester credits with an emphasis in heavy equipment mechanics. *(See Special Notes and Requirements)*

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):
Working knowledge of: agency and division rules, policies, and procedures; equipment operating systems and operating characteristics of light and specialized highway equipment; electrical theory and mechanical theory and design. **Ability to**: modify and/or adapt designs, procedures, or methods to design new systems, modify existing systems, or accomplish tasks more efficiently. **Skill in**: improvising as necessary to perform repairs in the field.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):
Working knowledge of: equipment systems and operating characteristics of medium and heavy highway maintenance and construction equipment from a variety of manufacturers; methods, materials, tools and equipment used in the construction, assembly, overhaul, repair, and adjustment of automotive and heavy construction and maintenance equipment; and safe working procedures and the proper use, storage, and disposal of hazardous materials. **Ability to**: write sufficiently to prepare repair orders, requisition supplies, and document the condition of equipment; read sufficiently to read and interpret repair orders, service manuals, operating system manuals, and hydraulic and electrical schematics; establish and maintain cooperative working relationships with co-workers and agency staff; work independently and follow through on assignments with minimal direction; diagnose and determine what is necessary in repairing a system to ensure proper working condition; use various diagnostic and testing equipment and precision measuring devices; and lift heavy components and equipment in a safe manner. **Skill in**: basic arc and acetylene welding and cutting and basic machining; and repairing, rebuilding and modifying all components of highway equipment including diesel and gas engines, automatic and manual transmissions, and hydraulic equipment.

This class specification is used for classification, recruitment and examination purposes. It is not to be considered a substitute for work performance standards for positions assigned to this class.

	9.317	9.318	9.321
ESTABLISHED:	7/1/91P 11/29/90PC	3/31/75	1/1/61
REVISED:		1/1/81	8/1/66
REVISED:		8/6/87-3	8/23/71
REVISED:		7/1/91P 11/29/90PC	2/16/73
REVISED:			3/31/75
REVISED:			11/21/80-3
REVISED:			8/7/81-3
REVISED:			8/6/87-3
REVISED:			7/1/91P 11/29/90PC
REVISED:	8/11/95UC	8/11/95UC	8/11/95UC
REVISED:	6/15/98UC	6/15/98UC	6/15/98UC
REVISED:	9/17/97R 7/10/98UC	9/17/97R 7/10/98UC	9/17/97R 7/10/98UC